

**APPLICATION FOR UNITED STATES PATENT
IN THE NAME OF**

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Assigned to

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for

Drywall Construction Device

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Drywall Construction Device

Background of the Invention

Area of the Art

[1] The present invention is in the area of interior building construction and
5 more specifically to a device to prevent moisture damage to wallboard.

Description of the Prior Art

[2] Traditional interior construction consists of framing the rooms with
wooden members ("two by fours") and attaching the interior wall forming
material to such a frame. In the case of all wood construction the entire building
10 skeleton is formed from wooden members with the exterior wall material as well
as the interior wall material being attached to the wooden frame. In the case of
a masonry construction such as a brick building, the wooden frame was
constructed within the brick shell and attached to the exterior brick walls.

[3] Until approximately the time of the Second World War interior wall
15 forming material in the United States was plaster. The plaster powder was
mixed with water and troweled onto support members attached to the wooden
frame to form a plaster wall. Originally, the support members consisted of
narrowly spaced apart wooden lath to which the plaster mixture adhered. Later
the wooden lath was replaced by a wire mesh that was much easier to install.
20 Finally around the time of the Second World War the plaster wall was replaced a
material variously known as by drywall or plasterboard or wallboard. Such
wallboard consists of a preformed sheet of a dry plaster-like (often gypsum)
material encased in a paper covering. The sheets can be simply lifted into
position and directly nailed onto the wooden frame without any need for lath or
25 mesh or troweling of wet plaster. The plaster-like material within the sheets
provides a wall with most of the favorable properties (insulation, etc.) of the

traditional plaster wall. A system of paper tape and filler is used to cover the seams between wallboard sheets to provide a smooth and seamless wall.

Finally, in some high-end installations, a thin coat of finish plaster is troweled over the wall to provide the texture of a "classic" plaster wall. Baseboard is
5 nailed or otherwise attached to the bottom of the wall to conceal the somewhat rough seam between the floor and the wall.

[4] This basic system has changed little in the last half century. In some buildings metal girders are main structural members and hollow metal studs have replaced wooden members in some construction. In these cases, various types
10 of mechanical devices have been perfected to allow attachment of wallboard to metallic members. U.S. Patent No. 3,748,815 to Parker, U.S. Patent No. 6,067,691 to Feltman and U.S. Patent No. 6,408,589 to Bousquet provide clips for attaching wallboard and similar sheet material to girders and similar structural members. Modern construction of stores and office building has placed a
15 premium on readily movable wall structures. U.S. Patent No. 2,730,209 to Larsen discloses a metal clip for sill construction in such walls. U.S. Patent No. 3,387,418 to Tyrer discloses a series of metal extrusions that can be used to assemble moldings and partitions. U.S. Patent No. 3,228,160 discloses a system of extrusions that support the bottom of a wall and allows for ready
20 application (and removal) of baseboard trim. U.S. Patent No. 5,901,515 to Watson provides a system of snap on baseboards for use where the drywall is constructed with a significant gap between the bottom of the drywall and the floor.

[5] In spite of the various devices just mentioned the vast majority of
25 drywall continues to be constructed by simply fastening the wallboard directly to the frame members (wood or hollow metal studs) with a small gap between the floor and the bottom edge of the wallboard. This gap is covered by a cosmetic

baseboard. A major difficulty with this traditional system is that drywall, even special types designed for use in moist locations, is vulnerable to water damage. If the base of the wall contacts standing water, the entire wall wicks up the water and becomes moistened. This is a particular problem in hospitals and similar situations where prevention of infection dictates that floors are frequently disinfected with often-harsh aqueous chemicals.

[6] If the drywall becomes wet, it loses much of its strength. Even if structural collapse does not ensue, the moistened wall usually develops discoloration due to fungal and bacterial growth and leaching of various constituent chemicals. Unless the baseboard is very carefully caulked, it provides no barrier to water, and any water used to clean the floor can readily reach the bottom of the wallboard and result in significant damage to the wall. It can readily be appreciated that fungal growth with the subsequent release of spores is a special anathema in a hospital situation—precisely the situation that frequent disinfecting is trying to avoid.

Summary of the Invention

[7] The present invention consists of a waterproof construction device formed to support the bottom edge of a drywall wall in a spaced-apart relation to the floor. This device is concealed by readily applied baseboard material, but even when water penetrates behind the baseboard, the water contacts the waterproof member and not the bottom edge of the drywall.

[8] The inventive construction device consists of a basal contact region that rests on a floor at the base of a wall frame. A support region sized to support the lower edges of drywall sheets is elevated at least one quarter inch above the floor by an elevation region that connect the support region with the basal

contact region. An attachment region contacts the wall frame and is in communication with the support region.

[9] The construction device is used by being placed along the base of a wall frame in contact with both the floor and the wall frame. The attachment region is fastened to the wall frame with fasteners such as screws and nails, with adhesive or with any other appropriate fastening methods or devices. Sheets of drywall or other similar wallboard are then fastened to the wall frame with their lower edges resting on the support region of the construction device. The base of the wall can then be finished by installation of a baseboard, which covers the construction device and is attached by either fasteners or adhesive.

[10] The elevation provided by the elevation region ensures that even if a large volume of water and chemicals are used to clean and disinfect the floor, any liquid penetrating the baseboard will not be able to wick up the wallboard and support discoloration and growth of microorganisms. In constructions likely to experience standing water on the floor, devices with elevation regions of two inches or more can be used to render the walls essentially immune to water damage.

Description of the Figures

[11] FIGURE 1 is a diagrammatic representation of a prior art wall and a wall employing the present invention when exposed to water from cleaning/disinfecting the floor.

[12] FIGURE 2 is a close-up exploded view of region 2 of Fig. 1 showing a prior art wall.

[13] FIGURE 3 is a close-up exploded view of region 3 of Fig. 1 showing a wall employing the present invention on a wall.

[14] FIGURE 4 is a cross-sectional view of a prior art wall taken along the line 4-4 in Fig. 1.

[15] FIGURE 5 is a cross-sectional view of a wall employing the current invention taken along the line 5-5 in Fig. 1.

5 [16] FIGURE 6 shows the present invention during wall construction before the application of the wallboard.

[17] FIGURE 7 shows a close-up of the present invention as taken in region 7 of Fig. 5.

[18] FIGURE 8 shows an enlarged view of region 8 in Fig. 7.

10 [19] FIGURE 9A shows an alternate extruded design of the current invention.

[20] FIGURE 9B shows the design of Fig. 9A produced by bending.

[21] FIGURE 10A shows another alternate extruded design of the current invention.

[22] FIGURE 10B shows the design of Fig. 10A produced by bending.

15 Detailed Description of the Invention

[23] The following description is provided to enable any person skilled in the art to make and use the invention and sets forth the best modes contemplated by the inventor of carrying out his invention. Various modifications, however, will remain readily apparent to those skilled in the art, since the general
20 principles of the present invention have been defined herein specifically to provide a simple wall construction apparatus to prevent wicking water damage to wallboard.

[24] The current invention is ideally suited for use in hospitals or other institutional settings where it is necessary to keep floors disinfected. Fig. 1 shows the corner of a room in such a setting. The right-hand wall 11 is a prior art wall of usual construction for an institutional situation where the wall/partitions are usually constructed with hollow metal studs. Although wood stud construction is illustrated, metal studs are, perhaps, more common than wooden studs in an institutional setting. In any case, the present invention is equally applicable to wooden studs or to metal stud construction as is illustrated in Fig. 6. Fasteners 14 secure the wallboard to the metal studs. Here screws are used as opposed to nails. Screws are virtually required for metal studs whereas nails are often the choice for wood studs.

[25] The left-hand wall 12 is a similar wall but constructed using the device 26 of the present invention. In the drawing the floor 20 is being cleaned and disinfected by a cleaning device 18 (AKA a mop) and cleaning solution 22. The cleaning solution 22 is flowing into contact with the baseboard 16. In this type of construction the baseboard 16 is attached to the walls 11, 12 with fasteners or adhesive. Usually the contact of the baseboard 16 with the floor 22 is not watertight (e.g., sealed with caulking compound). Therefore, the cleaning solution 22 leaks under the baseboard 16 to wet the lower edge of the wall 11. This ultimately causes liquid to wick up through the wall 11 where the wet wallboard supports the growth of mold and mildew resulting in a discoloration 23.

[26] If Fig. 2 (an exploded view of prior art wall 11) is compared to Fig. 3 (and exploded view of wall 12 employing the inventive device 26) it will become apparent why the wall 12 is not discolored by the mold spot 24. In the traditional wall 11 the wallboard 28 is supported by the floor 22. This is shown more clearly in Fig. 4, a cross-section along plane 4-4 in Fig. 2. Any cleaning

solution applied to the floor 22 (which is disposed on a subfloor 32) can readily seep under the baseboard 16 and wet the lower edge of the wallboard 28.

However the improved wall 12 is not disposed with the lower surface of the wallboard 28 in contact with the floor 22. Rather, inventive device 26 is

5 disposed along the base of the wall so that the lower edge of the wallboard 28 rests on an elevated support surface 27 that is sized to accommodate the edge of the wallboard 28. In a preferred embodiment the elevated support surface 27 is elevated about $\frac{3}{4}$ inch above the floor level; however, it will be apparent to one of ordinary skill in the art that any elevation sufficient to prevent moisture
10 from contacting the wallboard 28 is operational in the present invention. In addition, the elevation should not be so great as to bring the lower edge of the wallboard 28 above the top of the baseboard 16. In most installations elevations of between about $\frac{1}{4}$ and about 2 inches are workable.

[27] Fig. 4 shows a cross-section of a traditional wall. Water applied to the
15 floor 22 is able to penetrate the baseboard 16 and moisten the lower edge of the drywall wallboard 28. As illustrated by wooden stud 30 as compared to metal stud 30' this problem exists independent of the type of stud used. Of course, a real wall would not contain both types of construction spliced together. In Fig. 5 the device 26 elevates the wallboard 28 so that water on the
20 floor 22 cannot moisten the wallboard 28.

[28] During construction it is advantageous to attach the inventive device 26 to the base of the wall before the wallboard 28 is installed. Fig. 6 shows the inventive device installed along the base of a metal stud wall. As shown in Fig. 6 the device has an elevating region 29 supporting the elevated support region
25 27. The device 26 also has an attachment region 24 that is used to fasten the device 26 to the studs 30' by means of bolts 14', and a basal contact region

25. Note that the end of the device can be trimmed and closed by bending when, as here, the device 26 is constructed from sheet metal.

[29] Fig. 7 shows a close up view of the device 26 showing the basal contact region 25, the support region 27 and the attachment region 24. In a more magnified view in Fig. 8 the contact region 25, elevation region 29, support region 27 and attachment region 24 can be seen more clearly. In addition a layer of adhesive 34 between the floor 22 and the subfloor 32 is apparent. An additional layer 36 of adhesive or caulking compound can be applied between the basal contact region of the device 26 and the floor 22.

10 Another layer 38 of adhesive or caulking compound can be applied between the baseboard 26 and the drywall 28.

[30] The device 26 of the present invention can be manufactured from either metal or a plastic material. The embodiment of Fig. 8 can be extruded from plastic or metal or can be formed from metal sheet by bending. Fig. 9 shows an alternate embodiment of the device 26 formed by extrusion (Fig. 9A) or by bending (Fig. 9B). Fig. 10 shows yet another embodiment formed by extrusion (Fig. 10A) or bending (Fig. 10B). The embodiment of Fig. 10 shows an auxiliary region 27' forming a channel holding the base of the wallboard 22, further protecting it from moisture.

20 [31] The following claims are thus to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, what can be obviously substituted and also what essentially incorporates the essential idea of the invention. Those skilled in the art will appreciate that various adaptations and modifications of the just-described preferred embodiment can be configured without departing from the scope of the invention. The illustrated embodiment has been set forth only for the purposes of example and that should not be taken as limiting the invention. Therefore, it

is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described herein.